

## SUBSTITUTE SPECIFICATION

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### ABSTRACT

The invention relates to a method for producing magnetic nanoparticles which are made of metal oxide-polymer composites and are provided with an increased magnetic mobility, among other things, due to the high metal oxide content and the morphological structure thereof. High-pressure homogenization has proven to be a reliable technique for producing the inventive magnetic nanoparticles. According to said technique, the components metal oxide and polymer are processed in a carrier medium. Water is used in most cases at pressures ranging from 500 bar to 1200 bar while using great shearing forces. High pressure homogenization creates a colloidally stable magnetic particle population having a diameter ranging below 200 nm while also resulting in the produced magnetic nanoparticles being provided with greater magnetic moments than the metal oxide used as an initial material at low magnetic field strengths. The inventive particles are particularly suitable for applications in the bioanalytical and diagnostic field, in bioseparation processes, and as a carrier material in high throughput screening.